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ABSTRACT

This study sought to describe the norms of reciprocity in social interaction from the viewpoint of immediate behavioral exchanges by examining the social interaction of preschool peers in a free-play situation. Seventeen 4-year-old children, eight girls and nine boys, were observed during free play activity periods after a picture sociometric test had been administered. A coding system was used in recording different behavior transactions between individuals. The various code categories were verbal give, verbal receive, physical give, physical receive, verbal negative, verbal positive, physical negative, physical positive, do commands, don't commands, comply, and refuse. Sequential analysis was employed to examine the degree of reciprocity within particular interaction sequences. In this study analyses were concentrated only on the emotional affect categories (positive and negative patterns) without regard to their physical or verbal character. Furthermore, the unit of analysis was the occurrence of a particular type of behavior, not the activities of a specific individual. The findings revealed that reciprocal relationships were pervasive in preschool children's social interactions. A positive reciprocity norm was found in interactions among girls but not among boys. A negative reciprocity norm, however, was found for both sexes. In addition, it was found that the degree of reciprocity varied as a function of popularity. (Author/RH)

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RECIPROCITY IN PRESCHOOL PEERS' SOCIAL INTERACTION

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ABSTRACT

Seventeen 4-year-old children, 8 girls and 9 boys, were observed during free play activity periods after a picture sociometric test. A coding system was used in recording different behavior types. Sequential analysis was employed to examined the degree of reciprocity within particular interaction sequence. The findings revealed that reciprocal relationships were pervasively shown in preschool children's social interactions. The positive reciprocity norm was found in interactions among girls but not for boys. The negative reciprocity norm, however, was found in both sexes. In addition, it was found that the degree of reciprocity varied as a function of popularity.

Experience with preschool peers has commonly been assumed to make tremendous contributions to the development of young children. Previous research has yielded evidence which indicates that during the third and fourth years of life there is a decrease in the frequency with which the child seeks proximity to the mother (Maccoby & Feldman, 1972), and an increase in the frequency of attention seeking and seeking of approval through contacts with peers (Heathers, 1955). It has also been found that both initial and responsive social behaviors with peers increase developmentally in frequency (Finkelstein, Dent, Gallagher & Ramey, 1978) and complexity (Holmberg, 1980). One reasonable explanation for these findings is that children engage in more playful activities with peers in their preschool years. Indeed, play behavior appears to emerge almost completely within the context of peer interaction. Thus, preschool years can be viewed as a transitional period in which children begin to develop their social competency and to establish their social relationships with peers.

Although peer relations have been studied to a great extent, there are relatively few hard data concerning the sequential behavioral patterns of peer interaction in preschool play groups. Most previous studies of preschoolers' social interaction have focused on analyzing the overall frequencies and rates of social behaviors and overlooked the sequential nature of social interaction. Fortunately, there is an increasing recognition of the inadequacy of using frequencies or rates of various behavioral categories for summarizing data on social interaction and a growing concern for the detection of social

behavior pattern sequences (e.g. Sackett, 1978).

Gains (1979) reported that the acts of one partner mutually support and are coordinated with the ongoing activity of the other. Study by Patterson and Cobb (1971) also showed the influence of the partner on the interaction outcome of young children. Moreover, Gottman and Ringland (1981) argued that a reconceptualization based on the sequential character of social interaction would add much theoretical clarity to the study of social development.

The notion of reciprocity in a very general way includes both a positive reciprocity norm, which requires people to help those who have helped them, and a negative reciprocity norm, which allows people to harm those who have harmed them. In the present study, the positive reciprocity norm was operationally defined as the exchange of positive behaviors, and the negative reciprocity norm was defined as the exchange of negative behaviors.

The research literature concerning the reciprocity of children's social behavior has shown that children consistently and predictably reciprocate both positive (Charlesworth & Hartup, 1967; Kohn, 1966; Leiter, 1977; Marcus & Jenny, 1977; Staub & Sherk, 1970) and negative (Feshbach, 1970; Leiter, 1977) behavior. These findings suggest that the more social behavior children initiate with others, the more social behavior they receive in return; the more positive social behavior children initiate with others, the more positive social behavior they receive in return; and the more negative social behavior children initiate with others, the more negative social behavior they receive in return. These findings, however, give no information on

the immediate consequences of response, i.e., reciprocity within particular interaction sequences. In other words, these data do not answer the question, "Will the occurrence of a given criterion behavior (positive, neutral, or negative) increase the likelihood of the same criterion behavior in children's ongoing social interaction?"

Since the norm of reciprocity, both positive and negative, appears to characterize young children's social interaction with their agemates, it would seem appropriate to examine this notion from the angle of sequential behavioral exchanges rather than the overall behavioral initiations and responses.

Studies in children's social behavior also suggest that patterns of behavior may differ as a function of sex and sociometric status. Although sex-related behavioral differences are often controversial, current findings indicate that preschool boys are much more negative than girls (Hartup, 1974), but there is little sex differences in positive behavior (Maccoby & Jacklin, 1974). Gottman, Gonso and Rasmussen (1975) and Hartup (1970) report a moderate to high correlation between peer acceptance and positive social behavior. On the other hand, Gottman (1977) shows a positive association between peer rejection and negative social behavior. All the same, there is no information with respect to sex or sociometric status difference in immediate behavioral responses for a given criterion behavior.

Based on these ideas, therefore, the present study seeks to describe the norms of reciprocity from the viewpoint of immediate behavioral exchanges by examining social interaction of preschool

peers in a free-play situation. Both positive and negative patterns of reciprocity are investigated for the group as a whole, then differentiated by sex and popularity.

METHOD

Subjects

The sample consisted of 17 children, 8 girls and 9 boys. They were enrolled in the 4-year-old class at a university child development center. The age of the sample ranged from 4.0 to 4.3 years with an average of 4.2 years old. Subjects were predominantly white and middle class children.

Sociometric

A picture sociometric test was conducted, following the procedures described by Hartup, Glazer and Charlesworth (1967), to decide the extremely popular and unpopular subjects of both sexes. Individual pictures of the subjects were mounted on a board in random order with the order shifted after every third interview. Each subject was asked: (a) to name correctly the child in each picture; (b) to give three positive choices, i.e., "Now I want you to look over the pictures very carefully and find someone you especially like at school--remember, someone you especially like." and (c) to give three negative choices, i.e., "Some one you don't like very much." Both weighted and unweighted sociometric scores were calculated; the results were the same for four chosen target subjects. They were the extreme high choice boy, the extreme low choice boy, the extreme high choice girl, and the extreme

low choice girl.

The Behavior Code

The behavior code used in this study was used on the scoring of behavioral transactions between individuals. The behavior categories were scored using a Datamyte 900 event recorder. Table 1 describes the code and the order in which data were entered in the Datamyte.

Insert Table 1 about here

The various code categories were defined as follows:

1. Verbal give--Focus emits audible word(s) directed to one reference.

2. Verbal receive--Focus receives audible word(s) from one reference.

3. Physical give--Focus gives a physical touch to one reference.

4. Physical receive--Focus receives a physical touch from one reference.

A verbal give or receive must be a dictionary word, regardless of incorrect grammar or pronunciation. Nonsense syllables, squeaks, giggles, grunts, cat calls, moans, and the like are not scored. Physical gives and receives include physical contacts between two persons between their clothing or the passing of objects between subjects.

5. Verbal negative--Threats, insults, name calling, slander,

and other demeaning verbalizations. Also, verbalizations accompanied by negative facial expression, negative gestures, and the like.

6. Verbal positive--Positive affect, supportive and complimentary verbalizations. Also, verbalizations accompanied by positive facial expressions, positive physical gestures, pleasant intonation and positive words (such as help, like, and love).

7. Physical negative--Aggressive touch that includes hit, kick, punch, push, beat, or slap. Also, throwing things at others and the misuse of an object to strike or hit (object not used as intended).

8. Physical positive--Person touches, pats, or strokes, the other gently, with affection, sympathy, or apparent positive regard.

9. Do comands--Statement of actions or activities that should occur.

10. Don't commands--Statement of actions or activities that should be stopped.

11. Comply--Actions or statements conforming with the directions of a preceding command.

12. Refuse--A verbal statement by a command's recipient declining to conform to the command.

Procedures

Each child was randomly assigned a number, including the four target subjects. All seventeen children were observed equally during free play activity period after the sociometric test was completed. Observations took place during 8 weeks of the spring term for a total of 22 sessions, each one being approximately 45 minutes in length. The average observation

time for each child was about 50 minutes with a range of 42 to 57 minutes.

Two observers, who had approximately 3 months of observation experience before this study began, did the coding together during each observation session. A combination of in-situation experience along with extended observation and discussion of videotaped groups were used in observer training for three weeks before data collection.

The observers focused on a particular child (focal subject) for a set time period, 2 or 3 minutes, and then switched to the next subject. In the set time period, all individual behaviors of the focal child were recorded, as well as all social interaction involving this child. Behaviors not involving this child were completely ignored. The order of observation was randomly arranged and shifted after every week's observation.

Observer Agreement

Agreement between two observers was computed in two aspects. Agreement for the rates of each behavior type was quite high in which the median r = .90 across all sessions and all behaviors. Agreement for behavioral sequences was also quite high (median r = .86).

RESULTS

The data were analyzed using lag sequential analysis (Bakeman, 1978). The analysis begins by designating one behavior as the "criterion." Then a set of lag probabilities is constructed. Lags are defined as the number of event steps between sequential events. Lag 1 represents the conditional probability for a given behavior immediately following the criterion, lag 2 following an interventing

behavior, lag 3 following two interventing behaviors, and so forth. In the present study, lag probabilities were calculated up to lag 3. Conditional probabilities describe transitions making up sequential patterns whereas unconditional probabilities (relative frequencies) describe concurrent patterns in the data as a whole.

In this study analyses were concentrated only on the emotional affect categories without regard to whether or not they were physical or verbal in character. Furthermore, the unit of analysis was the occurrence of a particular type of behavior, not the activities of a specific individual.

Table 2 presents the result of sequential analyses for interaction among all peers.

Insert Table 2 about here

A comparison of the differences in relative frequencies and lag probabilities indicated that following the occurrence of a given criterion behavior, the probabilities for recurrence of the same behavior types tended to increase and last for some lags, whereas, the other behavior types tended to decrease at some lags. For example, a positive criterion tended to increase the probabilities for sequences of positive behavior and decrease the probabilities for sequences of negative and neutral behavior.

If one accepts a z score in excess of 2.0 as indicative of a sequence unlikely to occur by chance, some comparisons of the strengths

of effects of behavioral sequences are possible. The probabilities for immediate repetition of the same behavior types for all three criteria exceed the arbitrary decision level in our analyses. Thus, reciprocal relationships in social interaction of preschool peers exist in three forms: positive to positive ($z = 12.75$), negative to negative ($z = 15.03$), and neutral to neutral ($z = 4.00$).

As to sequences of behavior, the effects of a positive and a negative criterion last for three lags while the effects of a neutral criterion last for only two lags (lag 3, $z = 1.55$). Therefore, the occurrence of a positive behavior increased the probability of another positive response and decreased the chance of either a neutral or a negative interaction. A negative response increased the likelihood of another negative but decreased positive and neutral interactions. Neutral behaviors tended to maintain emotionally neutral responses.

When the data were examined for interactions between same sex, the effects of a positive criterion behavior on the sequence of positive behavioral responses never reached the significant ($z = 2.00$) level for all boys. However, when interactions between all girls were investigated, the sequence of positive behavioral responses following a given positive criterion behavior had exceeded the significant 2.0 level for three lags.

The data suggested that the positive reciprocity norm appeared in interactions between girls but not for boys. These findings can be seen in Table 3.

Insert Table 3 about here

In addition, figure 1 illustrates the effects of a positive criterion on the sequence of positive responses for interactions among all peers, all girls, and all boys.

Insert Figure 1 about here

The figure shows that the probability curves jumped to a level above the relative frequencies at the first lag; the girls' curve maintained through lag 2 then dropped at lag 3, the peers' conditional probabilities dropped from lag 2 to lag 3, and the boys' dropped to zero at the following two lags, respectively. This suggested that there might be a couple of paired positive behaviors occurred in the repertoire of interactions between boys, while there were some streams or chains of positive interaction between girls.

In terms of negative to negative interactions (see Table 4), we found that both boys and girls reciprocated negative behavior; however, the negative reciprocity norm was much stronger in interactions among all boys than all girls. The effects of a negative criterion behavior on the sequence of negative behavioral responses which exceeded 2.0 level occurred at all lags for boys. Indeed, once a negative behavior was emitted, there was almost a 50% ($p = .49$) chance that the next behavior by a boy would be negative. Even at lag 3, there was nearly

a 25% (p = .245) chance that an aversive response would occur among boys. Whereas, the significant increase in negative behaviors only appeared at lag 1 and lag 3 for interactions among all girls. In fact, the lag 1 probability for a negative following a negative among girls (p = .192) was not as great as the lag 3 probability for boys (p = .245). This finding was especially noteworthy given that there was less than a .02 difference in the relative frequencies of negatives between girls and boys.

Insert Table 4 about here

Figure 2 illustrates the negative to negative responses for interactions among all peers, all girls and all boys.

Insert Figure 2 about here

The probability curves rose at lag 1 for all three groups. The following two lags for both all peers' and all boys' dropped in sequence but still above the 2.0 level. However, all girls' curve appeared in a recurrent fashion, i.e., lag 2 dropped below the 2.0 level (z = .60) and lag 3 rose above the level again (z = 2.38). One reasonable explanation for this finding was that boys tended to respond negatively to negative initiations in an immediate fashion and then regressed gradually to neutral, whereas girls tended to respond

negatively to negative initiations in a recurrent or delayed fashion.

Sequential responses following positive and negative criterion were analyzed separately for the extreme popular/unpopular children. The data for positive interactions may be seen in Table 5.

Insert Table 5 about here

Taking the low choice girl (LCG) as the focal subject, we found that she reciprocated positive behavior with girls only (lag 1, $z = 5.57$). There were neither sequential responses nor immediate repetition of positive behavior in her interactions with all boys ($p = .000$ for three lags). In contrast, when we took the high choice girl (HCG) as the focal subject, we found that she reciprocated positive behavior equally with her peers, regardless of their sexual status.

When examining interactions between the low choice boy (LCB) and his peers, we found that there were no positive responses at all ($p = .000$ for all lags and relative frequencies), i.e., the LCB neither emitted nor received any positive behavior during our observations. Whereas, the high choice boy (HCB) reciprocated positive behavior with girls only but not with boys. In fact, following a positive criterion, both HCG and LCG tended to maintain a stream of positives but such streams were not the interaction characteristics for either HCB or LCB.

The data concerning the negative to negative interactions by peer popularity are shown in Table 6.

Insert Table 6 about here

The data indicated that the LCG tended to reciprocate negatives in an immediate fashion with both sexes (z score exceeded 2.0 level at only lag 1), whereas the HCG tended to reciprocate negative behavior in a delayed fashion (z score exceeded 2.0 level at only lag 2) with boys only. The difference between the HCB and the LCB in negative to negative interaction was that the LCB reciprocated negatives with boys only, whereas the HCB reciprocated negatives with both sexes. However, the relative frequency of negative interaction with all girls for the LCB (.067) was approximately three times higher than for the HCB (.026). Also, the probability of immediate negative response to a negative criterion for the LCB ($p = .640$) was about double comparing with the HCB's ($p = .368$) immediate negative response to all boys. Moreover, the data showed that following a negative behavior, both the LCB and the HCB tended to maintain a chain of negatives but such chains did not appear for the HCG or the LCG.

DISCUSSION

The results of the present study clearly indicate that the norm of reciprocity, both positive and negative, typifies the social interaction of preschoolers. Specifically, the analyses supported the hypothesis that the degree of reciprocity would vary as a function of sex and popularity.

For the group as a whole, this study demonstrated that the reciprocal relationships in preschool peers' social interaction appeared in three forms, i.e., positive to positive, negative to negative, and neutral to neutral. Moreover, the occurrence of a positive behavioral type would increase the probability for another positive response and form a stream of positives. The same kind of influence applied to negative and neutral behavioral types.

In terms of interactions between the same sex, we found that boys reciprocated negative but not positive behavior, whereas girls reciprocated both negative and positive behaviors. However, the degree of negative reciprocity was much stronger for boys than girls. Also, boys tended to reciprocate negative behavior in an immediate fashion and then regressed gradually to neutral, while girls tended to reciprocate negatives in a recurrent fashion.

Concerning sociometric status and reciprocity, we found that the LCG reciprocated negative behavior with both sexes but positive behavior with only girls. Whereas the HCG reciprocated positives with both sexes and negatives with only boys in a delayed fashion. The LCB neither received nor emitted any positive behavior at all in our observations, and be reciprocated negative behavior with only boys. The HCB reciprocated negatives with both sexes and positives with only girls. However, the negative reciprocity with boys for the LCB was much stronger than for the HCB. In addition, a stream of negatives appeared to typify the interaction for the HCB and the LCB, whereas a stream of positive appeared to characterize the interaction for the HCG and the LCG.

As Gottman et al. (1981) suggested, we believe that a reconceptualization based on the sequential character of social interaction will add much theoretical clarity to the study of social development. The present study has assessed the norm of reciprocity by locating the immediate responses for a particular type of behavior and has demonstrated that some behavior patterns of preschoolers social interaction might differ to certain degree for children who occupied different sexual statuses and the extreme ends of the popularity continuum. These findings would not be revealed by computing only the overall frequencies and rates of various categories of social behavior.

The findings reported here give strong indications that the reciprocity pervasively found in children's social interaction may provide a cue for researchers who aim to broaden the scope of understanding of behavioral patterns in peer interaction. Since this study had focused only on the systematic variations in the occurrences of particular types of behavior and disregarded the specific actors emiting those behaviors, the response following immediately after the criterion behavior may or may not be by the actor who emitted the criterion behavior. Also, the generalizability was limited by the small sample of predominantly white middle class subjects, and lack of available replications. Future research may focus on identifying the behaviors that are emitted or received by specific individuals and the situational factors that may influence such reciprocal interactions.

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TABLE 1

THE BEHAVIOR CODE

Type of Interaction	Emotional Affect	Other Person	Command and Comply
Column 1	Column 2	Column 3 & 4	Column 5
1=Verbal Give	1=Neutral	01-98=Individual Group Members	1=Do Command
2=Verbal Receive	2=Positive		2=Don't Command
3=Physical Give	3=Negative	99=Group	3=Comply
4=Physical Receive			4=Refuse
			5=None of These

TABLE 2

SEQUENTIAL ANALYSES FOR INTERACTION AMONG PEERS+

Behavior Frequency Relative Frequency	Sequence		Lag 1	Lag 2	Lag 3
Neutral to	Positive	p:	.029	.032	.037
		z:	-2.50	-1.84	-.52
2195	Neutral	p:	.938	.930	.924
		z:	4.00	2.55	1.55
.915	Negative	p:	.032	.038	.039
		z:	-3.02	-1.69	-1.58
Positive to	Positive	p:	.295	.221	.084
		z:	12.75	9.07	2.23
95	Neutral	p:	.695	.758	.874
		z:	-7.57	-5.46	-1.43
.040	Negative	p:	.011	.021	.042
		z:	-1.65	-1.15	-.17
Negative to	Positive	p:	.027	.036	.045
		z:	-.66	-.17	.32
110	Neutral	p:	.627	.745	.764
		z:	-10.78	-6.35	-5.66
.046	Negative	p:	.345	.218	.191
		z:	15.03	8.64	7.28

+The z-score reported in the table should be interpreted as an index since the data do not meet the assumption of statistical independence. Following Bakeman (1978), we presume that the z index in excess of 2.0 would suggest a conditional probability unlikely to occur given the unconditional probability of that behavior in the population of all behaviors.

TABLE 3

SEQUENTIAL ANALYSES FOR SEXUAL STATUS AND

POSITIVE TO POSITIVE INTERACTION

Subjects	Relative Frequency		Lag 1	Lag 2	Lag 3
All Boys	.015	p:	.083	.000	.000
		z:	1.93	-.43	-.43
All Girls	.079	p:	.350	.350	.175
		z:	6.38	6.38	2.27

TABLE 4

SEQUENTIAL ANALYSES FOR SEXUAL STATUS AND

NEGATIVE TO NEGATIVE INTERACTION

Subjects	Relative Frequency		Lag 1	Lag 2	Lag 3
All Boys	.067	p:	.491	.321	.245
		z:	12.31	7.37	5.18
All Girls	.051	p:	.192	.077	.154
		z:	3.27	.60	2.38

TABLE 5

SEQUENTIAL ANALYSES FOR POPULARITY AND

POSITIVE TO POSITIVE INTERACTION

Subjects Interact With Peer Groups	Relative Frequency		Lag 1	Lag 2	Lag 3
LCG With All Peers	.054	p:	.333	.259	.148
		z:	6.40	4.70	2.15
LCG With All Girls	.072	p:	.360	.280	.160
		z:	5.57	4.02	1.70
LCG With All Boys	.013	p:	.000	.000	.000
		z:	-.16	-.16	-.16
HCG With All Peers	.063	p:	.282	.282	.154
		z:	5.61	5.61	2.32
HCG With All Girls	.093	p:	.333	.333	.133
		z:	3.22	3.22	.54
HCG With All Boys	.053	p:	.208	.167	.083
		z:	3.40	2.49	.67
LCB With All Peers	.000	p:	.000	.000	.000
		z:	.000	.000	.000
LCB With All Girls	.000	p:	.000	.000	.000
		z:	.000	.000	.000
LCB With All Boys	.000	p:	.000	.000	.000
		z:	.000	.000	.000
HCB With All Peers	.035	p:	.269	.077	.000
		z:	6.52	1.17	-.97
HCB With All Girls	.038	p:	.375	.125	.000
		z:	7.02	1.81	-.80
HCB With All Boys	.030	p:	.100	.000	.000
		z:	1.28	-.56	-.56

Note.--LCG: Low Choice Girl; HCG: High Choice Girl;
LCB: Low Choice Boy; HCB: High Choice Boy.

TABLE 6

SEQUENTIAL ANALYSES FOR POPULARITY AND NEGATIVE TO NEGATIVE INTERACTION

Subjects Interact With Peer Groups	Relative Frequency		Lag 1	Lag 2	Lag 3
LCG With All Peers	.062	p:	.226	.129	.129
		z:	3.76	1.53	1.53
LCG With All Girls	.066	p:	.217	.087	.174
		z:	2.91	.40	2.07
LCG With All Boys	.053	p:	.250	.125	.000
		z:	2.48	.90	-.67
HCG With All Peers	.015	p:	.000	.111	.000
		z:	-.37	2.41	0.37
HCG With All Girls	.019	p:	.000	.000	.000
		z:	-.24	-.24	-.24
HCG With All Boys	.013	p:	.000	.167	.000
		z:	-.28	3.29	-.28
LCB With All Peers	.144	p:	.615	.462	.385
		z:	6.86	4.62	3.50
LCB With All Girls	.067	p:	.000	.000	.000
		z:	-.27	-.27	-.27
LCB With All Boys	.151	p:	.640	.480	.400
		z:	6.84	4.60	3.49
HCB With All Peers	.040	p:	.300	.133	.167
		z:	7.25	2.60	3.53
HCB With All Girls	.026	p:	.455	.273	.273
		z:	8.87	5.11	5.11
HCB With All Boys	.058	p:	.368	.263	.158
		z:	5.81	3.84	1.87

Note.--LCG: Low Choice Girl; HCG: High Choice Girl; LCB: Low Choice Boy; HCB: High Choice Boy.

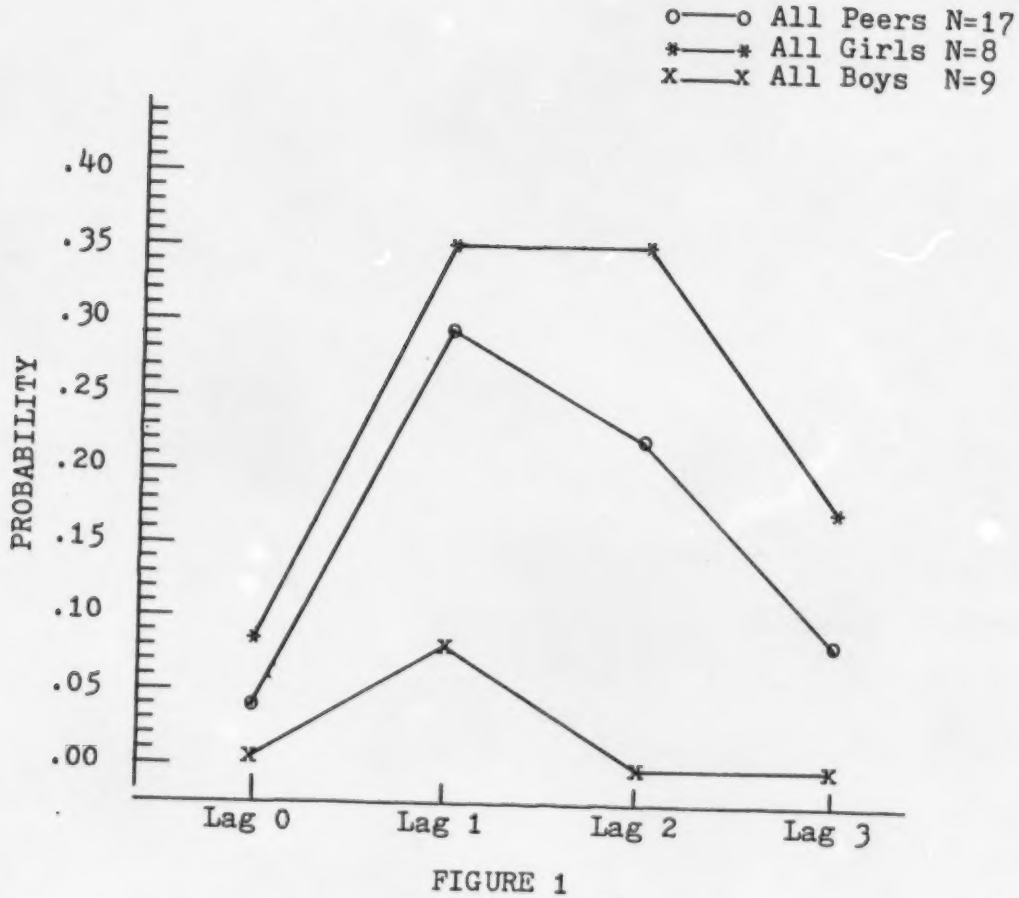

FIGURE 1

RECIPROCITY IN POSITIVE INTERACTIONS

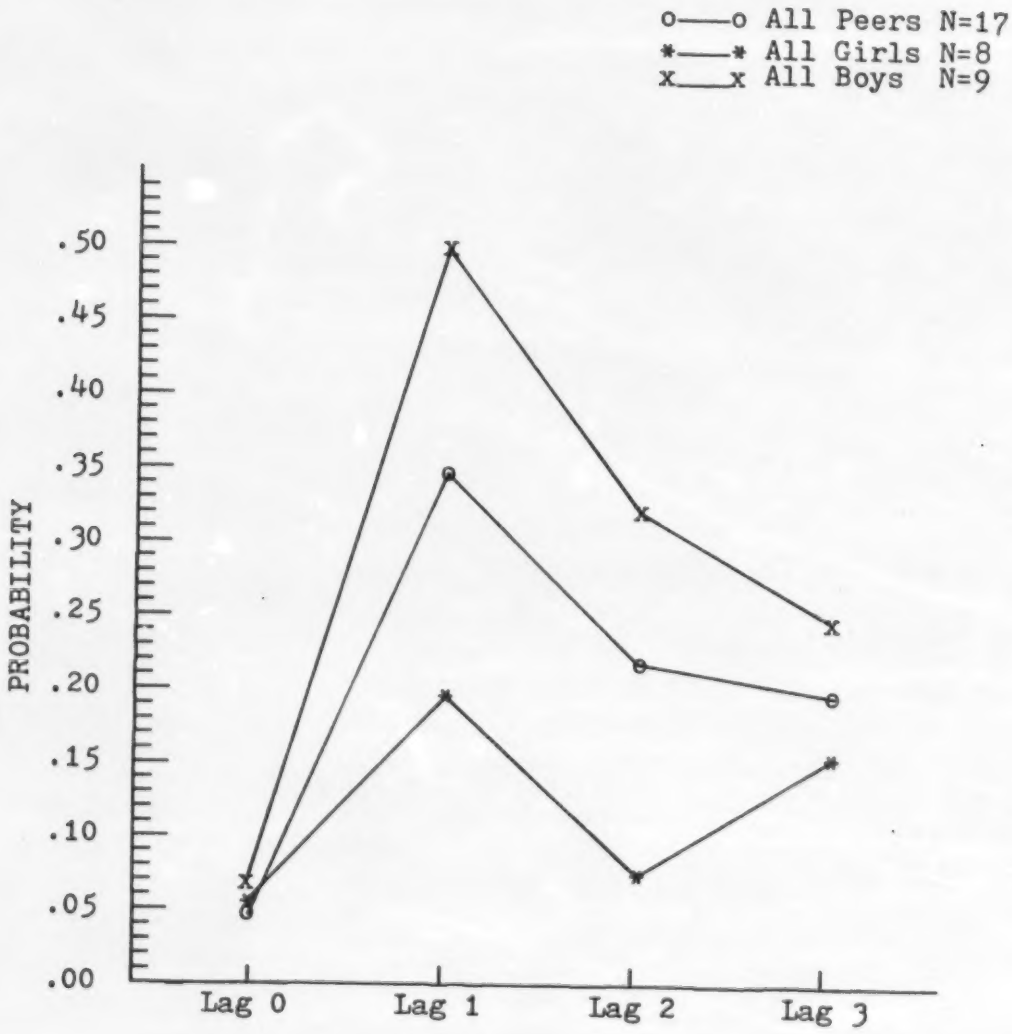

FIGURE 2

RECIPROCITY IN NEGATIVE INTERACTIONS